

was going on round him. He died 1898 April 25, at Exton House, Brighton, in his 82nd year.

Mr. Barclay began to take an interest in astronomical work some time before 1854, as he tells us in the Introduction to the *Leyton Observations*, vol. i. In the autumn of 1854 he set up an Observatory with  $7\frac{1}{4}$ -inch equatorial by Cooke, and transit circle by Troughton & Simms. He scrutinised *Procyon* for a companion which might explain its irregular proper motion, and detected a wide (45'') faint (10.5) companion, which was not however measured till eight years afterwards. He made drawings of the planets, observed partial eclipses, and did similar astronomical work. He was elected a Fellow of this Society 1855 December 14.

In 1860 the  $7\frac{1}{4}$ -inch was exchanged for a 10-inch by the same makers, and "the possession of this fine instrument soon taught him the necessity of having someone fully competent to carry on a regular series of observations and reductions." He thus secured the services, as assistant, first of Hermann Romberg, who, however, very shortly left for Berlin and then for Pulkowa (he died 1898 July 6, less than three months after Mr. Barclay); and then of Mr. Talmage, who was continuously in charge of the Observatory from 1865 till his death in 1886.

On the appointment of a regular observer, the work of the observatory settled down into a regular routine, chiefly of double-star observations, though in the first two years Romberg observed some minor planets and comets. Four volumes of *Leyton Observations* were published (size of page 11 in.  $\times$   $8\frac{1}{2}$  in.; No. of pages, vol. i. 120, ii. 140, iii. 42, iv. 140), and a fifth was promised (*Monthly Notices*, xlv., p. 231), but has not yet appeared. On Mr. Talmage's death the observatory was discontinued, the equatorial being presented to the Radcliffe Observatory, Oxford, and the transit circle to the University Observatory, Oxford.

In the introductions to these volumes a brief description of the observatory and instruments is given. The following remarks about the dome are worth recalling:—

"... A wooden dome, covered with copper and lined with American cloth, which I found prevented the internal condensation of vapour." (Vol. i., date 1865.)

"Several gentlemen who are building observatories have visited Leyton for the purpose of inspecting the dome, the arrangements of which continue to give perfect satisfaction." (R.A.S. report, 1876 February.)

LATIMER CLARK was born at Great Marlow, Bucks, 1822 March 10. He originally studied chemistry, and was manufacturing chemist in a large establishment in Dublin; but the activity in railway construction had too great a fascination for him, and in 1847 he commenced railway surveying under his brother, Edwin Clark (who was also a Fellow of this Society, and died in 1894). The latter was soon appointed Superintending Engineer for the Britannia Tubular Bridge across the Menai

Strait, under Robert Stephenson, and Latimer became his assistant (1848–1850). During this period he almost miraculously escaped being crushed to pieces when the tube accidentally fell : his body was compressed into a narrow recess in iron which shielded him from injury, but buttons and portions of his clothing were flattened to the thinness of gold leaf. He afterwards published a description of the bridges, which has run through several editions as a guide book.

During this work at the Menai Bridge Mr. Latimer Clark used to fire a time gun at 8 o'clock by electricity, a circumstance which attracted the notice of Mr. J. L. Ricardo, Chairman of the Electric Telegraph Company, and Mr. Clark was offered, in 1850, the position of Assistant-Engineer in the Company under his brother. Three years later he succeeded his brother as Engineer-in-Chief, and held this position till 1861 ; and he was then Consulting Engineer till 1870, when the Government took over the business. From 1862 he was Engineer to the Indian Government, and returning from some work in the Persian Gulf he had the misfortune to be shipwrecked, and only his great physical strength enabled him to swim ashore with a dislocated shoulder. With Mr. Forde and Mr. Herbert Taylor he formed a firm of consulting engineers, which has taken part in most of the important cable-laying operations of recent years.

The work of a busy and successful engineer is full of interest for almost any one, but the details, except those specially connected with Astronomy, would be here somewhat out of place. It may be briefly mentioned, however, that Mr. Clark, in 1853–6, introduced the insulation of underground wires by a solution outside the gutta-percha ; he first proposed and applied the pneumatic system of conveying letters, parcels, or telegrams, now so extensively used : he invented the inverted double-cup earthenware insulator. From some experiments in conjunction with the late Sir Charles Bright was evolved "Clark's Compound," whereby the life of a cable has been increased five-fold ; he improved the earlier designs of his brother Edwin for hydraulic docks, and thus introduced the single and double-walled docks, of which 40 have been built since 1872 for all parts of the world. These are a few only of his many engineering exploits. But he did a great deal of purely scientific work. In the fifties he conducted a long series of experiments on submarine and subterranean wires, showing that the rate of flow of the current was constant, irrespective of the electromotive force. Faraday was much interested in these experimental results, which confirmed his anticipations in a remarkable way. He gave a lecture on Mr. Clark's experiments to the Royal Institution. (See *Proc. R. Inst.* for 1854 Jan. 20 ; also Faraday's *Experimental Researches*, vol. iii. pp. 508–520.) Mr. Clark also took an important share in the development of the time signal system, though not quite at the beginning. It appears from MS. records that the idea was first started by Airy, and carried into practice by Airy and Edwin Clark working together ; but Edwin Clark retired from the

Electric Telegraph Company as above mentioned, when the system was established, and when Latimer succeeded him he took up the subject of time signals enthusiastically, and gave much assistance in extending it, *e.g.* to regulation of the Post Office clocks, Westminster clock, longitude operations, &c. The Post Office clock regulation (*i.e.* the mechanical correction of clocks by hourly signal) was after some years discontinued.

About the same time Mr. Clark was the means of having magnetic observatories furnished with wires for the observation of Earth currents.

In 1882 he introduced his little transit instrument, illustrated and described in an octavo volume, *A Treatise on the Transit Instrument as Applied to the Determination of Time, for the use of Country Gentlemen.* "The motive of this little work," he said in the preface, "is a desire to introduce the transit instrument into more common use for purposes of utility and amusement. . . . The writer believes that if this charming instrument were more fully known it would become as popular as the stereoscope or the camera; and the object is to show that it may be easily employed by amateurs or others who have not the slightest pretence to scientific knowledge." He also published a *Manual of the Transit Instrument*, 1882, *Transit Tables* annually from 1884 to 1888, and in 1886, in conjunction with the late H. Sadler, F.R.A.S., the *Star Guide*, a useful work of general reference. Mr. Clark's accuracy and clearness made him specially fitted for compiling works of reference. His *Dictionary of Metric and other Useful Measures* appeared eight years ago, and no errors, or practically none, have since been found in it. He collected a very fine library, specially rich in electrical science (he left 4,000 volumes and 2,500 pamphlets dealing with electricity, some of them of great value).

Mr. Clark was President of the Society of Telegraph Engineers (which has since become the Institution of Electrical Engineers) in the fourth year of its existence—1875. He became a member of the Institution of Civil Engineers in 1858, a Fellow of the Royal Geographical Society in 1862, of this Society in 1874, and he was also a member of other societies and institutions. He twice married, in 1855 and in 1863. By the first marriage he had two sons, of whom the elder is an engineer, and the younger, after serving in the 5th Northumberland Fusiliers, is now in the Government Land Office at Adelaide. The second Mrs. Clark survives, but there were no children by the second marriage.

Mr. Clark died suddenly on Sunday, 1898 October 30.

EDWIN DUNKIN was born on 1821 August 19, at Truro in Cornwall. He was the third son of William Dunkin, who was one of the computers of the *Nautical Almanac*. In those days the *Nautical Almanac* had no local habitation, and those engaged in its reductions could live where they pleased, and used to send their